

CONSUMPTION:

A Curable Disease.

BY

JAMES SWANSON, M.A., M.B., C.M., F.F.P.S.G.,
GLASGOW.



*A LECTURE DELIVERED UNDER THE AUSPICES OF THE GLASGOW
CAITHNESS LITERARY ASSOCIATION.*

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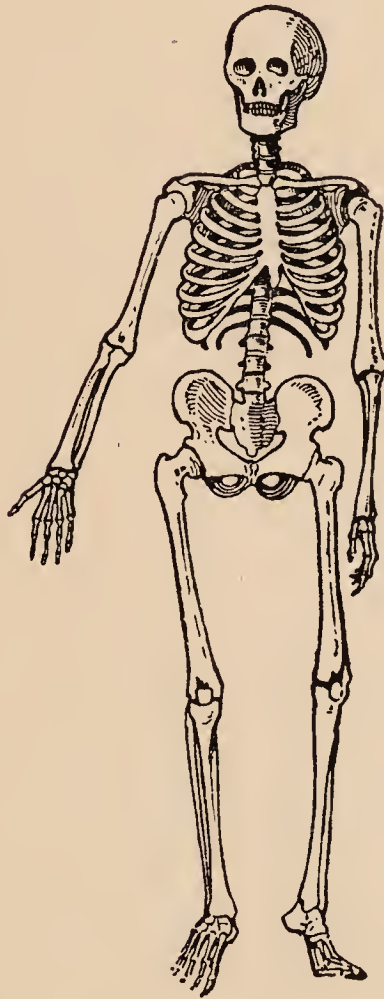
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"I cannot help believing that curative medical treatment will, by and by, resolve itself, in great measure, into modifications of the food swallowed and air breathed. Food and oxygen—the body and breath of life—are before all, through all, and back of all vital action."—*Oliver Wendell Holmes.*

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CONSUMPTION:

A CURABLE DISEASE.

FOOD and oxygen, the body and breath of life, are before all, through all, and the back of all vital action. In few words. Oliver Wendell Holmes gives the essential point of modern treatment, Here is the secret of prevention and cure, not only of consumption, but of every disease.

Ten years ago the majority of medical men in this country considered consumption an incurable disease. Cases of undoubted cures that came under my own observation were set down as due probably to defective diagnosis. In taking this attitude, medical men failed to note that authentic cases of cure were recorded long before we had attained our present extended knowledge of the cause, course, and treatment of the disease.

A doctor in Utah wrote in the year 1859, stating a most interesting fact regarding the influence of that climate upon tubercular disease, namely, that numbers who came there suffering from consumption were completely cured. As early as 1840 Bodington was successful in curing cases of consumption, mainly by attention to proper feeding and fresh air.

The profession as a whole have now renounced their former pessimistic attitude, and are willing to recognise, not only that a *cure is possible*, but under favourable conditions, *certain*. They also recognise the immense importance of educating the people regarding the means of preventing the spread of this terrible scourge. His gracious Majesty, King Edward, has shown the keenest interest in this educative movement. He clearly sees that the abolition of Tubercular Diseases depends above all on increased knowledge of this important subject on the part of the masses, especially in our great cities.

How can this knowledge be gained? Part of the money which has been given, and will continue to be given, for the erection and equipment of Sanatoria, might be used for the institution of Popular Lectures.

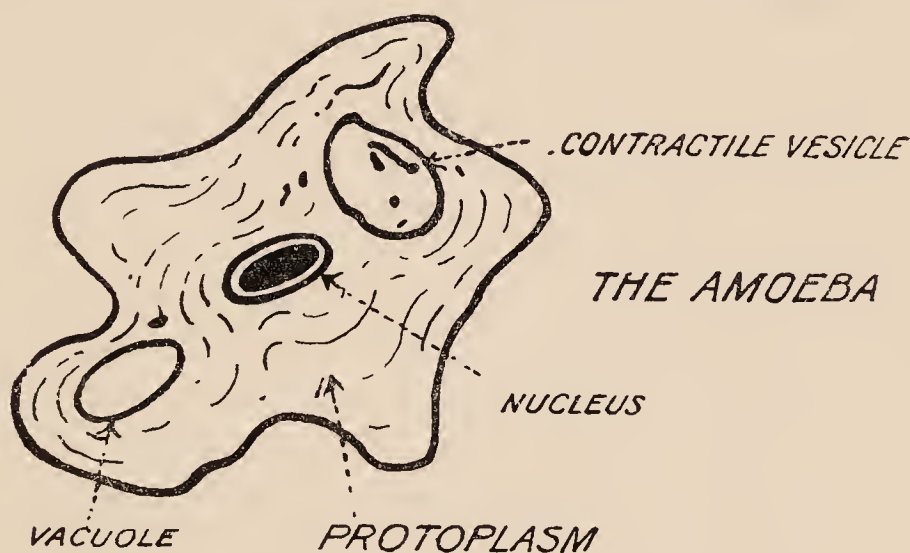
Glasgow was last year visited by an epidemic of Smallpox. The epidemic gradually extended, notwithstanding the efforts of the Health Officer, aided by numerous other medical gentlemen. At last Dr. Carmichael suggested that the Lord Provost should call a meeting of all the medical men in Glasgow. This was done, and each man received a certain district. In a short time every house in the city was visited, and the great majority of the people of Glasgow were vaccinated. The epidemic was in a short time completely stamped out. The same might be done at much less expense by each doctor undertaking to deliver a course of lectures on tubercular disease in his own district, and also to the children in the public schools. Mr. Harmsworth, the member for our county of Caithness, will, I have no doubt, give this idea his careful attention, and, if need be, bring it before His Majesty the King.

Education is our object to-night. First, you must understand clearly the *fundamental principles* of a healthy life. Briefly, these are *light, abundance of fresh air, a sufficiency of plain food, exercise, and suitable clothing*. These are very simple, but of the highest importance. Try to understand them; they are of greater value than gold or precious stones, of more lasting benefit than the greatest honour that man can bestow. In explaining the subject of consumption and its cure, I shall illustrate these points more fully.

What is Consumption? A wasting of the body: the person is consumed, or burnt slowly to death. The dearest in our home, mother, father, or child, is seen fading gradually away, suffering pain which we have apparently no power to lessen. I am not indulging in romance, but stating facts which have come under my own observation. Nothing is more painful than to see a poor husband watching his wife, the mother of his children, slowly day by day getting thin and feeble, and after a long and heartrending struggle, parting from all that is dear to her in the universe. I have stood by the bedside of a mother's only child, and have seen an agony on that mother's face which no pen can picture, and no human mind can fathom. I have another case in my mind, a father seized with Consumption, a wife and six children left in terrible distress. Why do I mention such cases? That you may understand the dreadful suffering which this disease causes in the world, and do your best to avoid it yourselves, to cure those who suffer from it,

and, in fine, to aim at its entire abolition. Scenes such as these are burnt into my brain, and I wish them burnt into the *minds* of all people, so that all may strive with their whole strength and soul to make such things impossible. Only by strenuous personal exertion, can we hope to attain results. *Acts of Parliament are not sufficient, Wise men make their own Acts of Parliament. Know your own bodies. What am I? Whence came I?* These are the greatest problems that can engage the human mind.

The mystery that surrounds life is great. The greatest minds in the world have in all times tried to answer these questions, but after all we can only speak of these things from a physiological, and



not from a psychological point of view. *What am I? A collection of minute organisms or cells.* The simple cell, such as is exemplified in a minute animal termed the amœba, manifests all the phenomena of life in exactly the same way as a human being, the only difference being that the conditions of life in the human being are more complex.

The amœba is found among the duckweed, which, during the summer months, fringe stagnant pools. The name is derived from the Greek word *αμβη*, meaning change, referring to the peculiar power which the animal has of changing its form. Processes of the soft protoplasm termed “pseudopodia,” or “false feet,” are formed spontaneously from any part of the body; these quickly disappear, and others are projected from different parts of the body. The process of life in the amœba is simple, and can be

observed by feeding it with a coloured substance, such as carmine. The particle of coloured food is enclosed by the pseudopodia, and these melt into one another at their extremities, finally the food being engulfed within the creature's body.

The process of seizing and swallowing in the amoeba may be aptly compared to the thrusting of a stone into a piece of clay, whilst within the creature's body the nutritive part of the food will be extracted by a process of digestion, similar to that which takes place in the human body. The structure of this minute cell is seen in the diagram. The firmer and darker portion of the body is called the "nucleus." This part has a very important function in connection with the reproduction of the cell. The same structure is seen in each cell of the human body. A clear space is also seen. The position of this space may vary at different times. It has the power of contracting and expanding, and has therefore been termed "the contractile vesicle." It may be regarded as a rudimentary heart, by which nutritive fluid is circulated. Clear spaces are also formed around the food particles. These spaces are known as *vacuoles*, and have, no doubt, some function in connection with digestion. No nervous system has been found, but it should be clearly remembered that the entire cell functions as a nerve organ. Here is the most marvellous creature that lives in the universe. With no mouth, it nevertheless is able to eat ; with no limbs, it can still walk ; with no eyes, yet it can see ; without ears, it can certainly hear ; without a stomach, it can digest, it can taste and enjoy its food, yet it does all these things exactly as we do, for how do we see, hear, digest, think, and carry on all the complicated processes of our daily life ? All, even the most brilliant and poetic thoughts that proceed from the human mind, arise from cells with the same structure as that of the amoeba.

As we ascend in the scale of life, the animal becomes gradually more complex, and the cells of which they are composed undergo various changes. When a number of cells become aggregated to form a complex individual, a *division of labour* becomes necessary, with the result that certain cells come to have different characters, suitable to the different duties they must perform. Combinations of certain cells form what the books call "tissues," such as "connective tissues," "bony tissues," etc., while other cells form special

organs, such as the brain, liver, stomach, etc. The organs of any animal are formed in accordance with the life which that animal has to lead. An animal, including the human animal, *must care for itself*. That is one of the essential conditions of a healthy life. To do this efficiently it must :—(1) *Protect itself*, hence certain cells are modified to form the skin. (2) *Nourish itself*, therefore cells aggregate to form an alimentary canal, heart and blood vessels. (3) *Remove waste*, hence the presence of kidneys and lungs. (4) *Adapt itself to its surroundings*, so that organs of locomotion, prehensile and offensive organs are formed. (5) *Guard against enemies*, and to do so, sensory organs are formed, organs to receive impressions, such as the eye and the ear, and organs to stimulate other parts, as the brain.

The amœba may be compared to a single man, or to a small business. One man may be easily fed, a small huckster's shop may be carried on by a single person, but when it comes to a question of feeding a quarter of a million of men, or conducting a vast business, then organisation, division of labour, becomes a necessity. Failure in organisation is disastrous. The same is the case of the human body. Millions of these cells are aggregated to form a human being, each has in some mysterious way a life of its own, takes in nutrition, and throws off waste matter, yet we are individuals, each has a single consciousness, an *ego*. When, however, anything goes wrong with the humblest member of this complex community, the *individual* feels it at *once*. All these individual cells seem undoubtedly to have a consciousness of their own, but the whole consciousness of the millions of cells seems to be brought to a point and appears as one consciousness. *Disease*, however, shows that each cell has a separate consciousness. The *one* object of our physical life is to see that each cell is kept in such a healthy condition as to have no special consciousness, but that we should have a general sense of *ease* or wellbeing. How can this desirable end be attained? *Observe a few simple rules*.

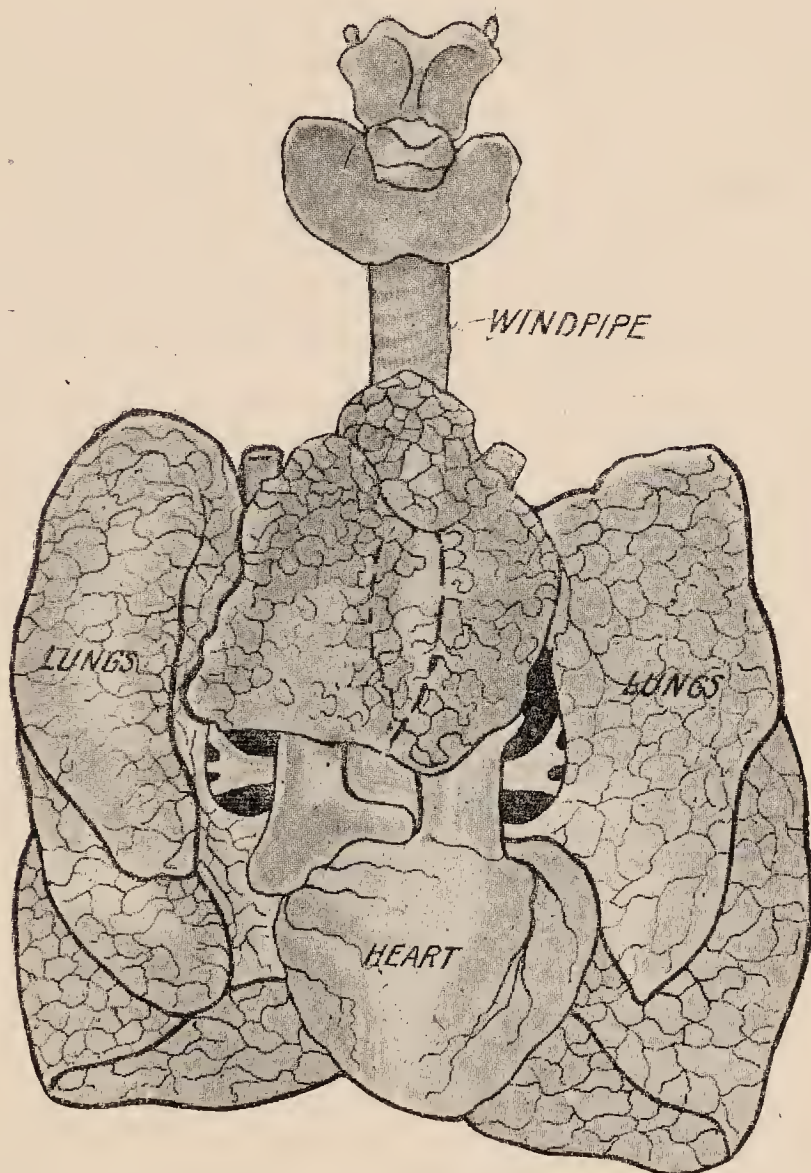
You need not be a millionaire; you can have the greatest and best things in the universe without money and without price. *What are the best things in creation?* The first essential of healthy cell life is *Light*. The centre of all life is *Sunlight*. *Free to all*. The best, the most efficient Antiseptic, Anti-disease, Anti-consumption

agent in the universe, the thing without which we would all cease to think, cease to hope, cease to be, the great source of all life and energy in this earth of ours. Why is it so hard to teach the people that without the sun they and their children cannot live? Why will people shut out this great germ destroyer from their houses? We wait for Parliament to help us. Why? Don't wait for a better house, don't wait for sanitary measures, *open your doors and windows*. Don't mind fading your window curtains and carpets. Let as much *sun* in as you can. If you can't get much to come in, then go out and worship the sun. It will do you more good than some of the idols you worship. At all costs, I say, if you wish to escape consumption or any other disease, get sunlight and plenty of it. Fortunately the Creator has been kind to His children, and the costs are not great.

Some here are biologists, that is, they study living things. These friends will tell you that living cells in the plant world cannot exist without light. In order that these living cells should convert the dead inorganic material of the soil into living protoplasm, they *must* have sunlight. Grow plants out of the sunlight, they gradually become pale and die. Human beings are slow to learn the lessons which nature teaches. They place more faith in the expensive nostrums of the quack than in the beneficial and health giving gifts of nature. An old writer on medicine, speaking of the consumptive, has truly remarked that the outside of a horse was the best thing for the inside of the consumptive, or for that matter for any human being. for riding not only gives the benefit of the sunlight and exercise, but it also gives that without which no living thing can remain healthy, namely, abundance of *air*. *Pure air* is essential for the health of all living things, plants as well as animals. The want of *pure air and sunlight are two of the most prolific causes of consumption*. How long can a man live under water? He drowns in about one minute and a half. Hundreds in Glasgow are slowly drowning because they wont admit the *free* air of heaven into their homes.

Now, as to the cause of consumption, the *poor* microbe is, I fear, blamed unduly. I have serious doubts as to whether the microbe is quite so guilty as many would have us believe. In my estimation, the microbe is a detective, a Sherlock Holmes, ever on the look out

for the sinners in the community, ready to seize hold of and punish the sinner. Keep in the straight path, keep your mind and body clean, and the microbe will rarely trouble you, but do otherwise, and this omnipresent thing will, in spite of all health officers, sanitary precautions, and Acts of Parliament seize hold of you and scourge you even unto death. Let there be no doubts in your minds as to



what I say. I speak not as a religionist, not as an enthusiast, but I speak from years of physiological experience, which, after all, is human experience, and I say the Old Book is right, "Be sure your sin will find you out."

Consumption as a rule attacks that part of the body which is engaged in supplying the other cells with air, the important constitu-

uent of the air being oxygen. The cells engaged in this work are collectively known as the lungs. Many people supply these cells constantly with impure air. The lungs not only take in pure air when they can get it, but they also throw off impure air. When a sparrow is placed under a bell glass of ordinary size it will live for three hours, but if, after one hour, a fresh sparrow is put in it will perish instantly. Each individual requires for health two thousand cubic feet of fresh air per hour day and night.

There is no doubt that the discovery by Koch, in 1856, that a germ was the cause of consumption, has given a tremendous impetus to the study and cure of the disease. Bacteria are the lowest forms of organisms. They are organisms upon which I fear we are apt to look with extreme horror, and yet, without their beneficent work, human life would cease to exist on the face of the earth. Individually they may be our unseen foes, but collectively they are our friends. In some cases they seem to produce terrible havoc in communities. They act by a process of *fermentation*.

Take a bottle with warm water, sugar, and yeast; cool this, and allow it to stand, fermentation will be produced by the living yeast cells. This will be shown by the formation of a substance known as alcohol, and carbonic acid gas will be given off. The process will go on until the yeast cells have used up all the nutritive material, then they are killed by their own waste products. In the same way when a plate with sugar and broth is exposed to the air, fermentation takes place, a scum rises to the surface, millions of bacteria are formed, a bad odour is noticed, and the fluid is poisonous. After a time the microbes are killed by their own excreta. The above is the explanation of the struggle that goes on in many diseases. In consumption the bacilli act as irritants and produce inflammation, either chronic or acute. The condition produced depends on the kind of irritation. A thorn in the finger causes acute inflammation, more blood comes to the part, it swells, becomes painful and red. If the thorn remains in, the pain increases, and throbbing takes place. The part swells, becomes more dusky and softer, the cells die, and an abscess forms. A strong acid on the other hand would kill a lot of the tissue at once and an ulcer would be formed. In the case of a tight boot, the irritation is not constant, and increased growth takes place slowly, that is, a corn is formed. The strong

irritants tend to destroy the parts, the milder tend to produce increased growth.

After death from consumption, peculiar conditions are found in the lungs, little gray or yellow nodules caused by inflammation. Koch discovered the irritant, a minute rod-shaped body, which I show you. Millions of these bodies could go in the space of a square inch. They can be stained in a special way by certain aniline dyes. These organisms can be cultivated in test tubes outside the human body. They are difficult to kill, and



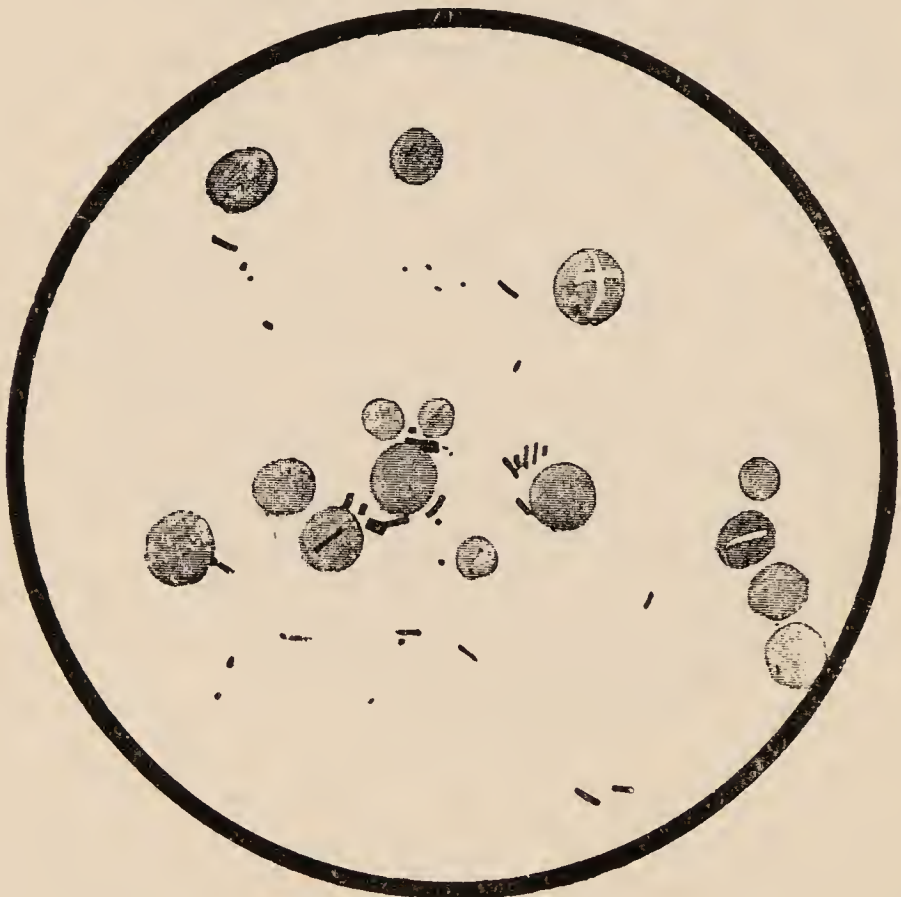
TUBERCULAR BACILLI.

will even survive the effects of boiling for a considerable time. When mice or guinea pigs are injected with these microbes, they die of consumption.

The consumption bacillus usually enters by the mouth, and settles wherever it finds a suitable soil, that is, a weak part of the body. The microbe then multiplies with extreme rapidity. Nature has, however, provided a means by which the growth of the bacilli may be checked, or, under favourable conditions, by which the

microbes may be entirely destroyed. In the healthy blood of human beings there are numerous large white cells with a number of small bodies within them called nuclei. These cells have the power of eating the microbes, and in consequence of this power they are called "phagocytes," from the Greek word meaning to eat, and the process is spoken of as phagocytosis. The whole theory of phagocytosis has been carefully worked out by the Russian pathologist, Metschnikoff.

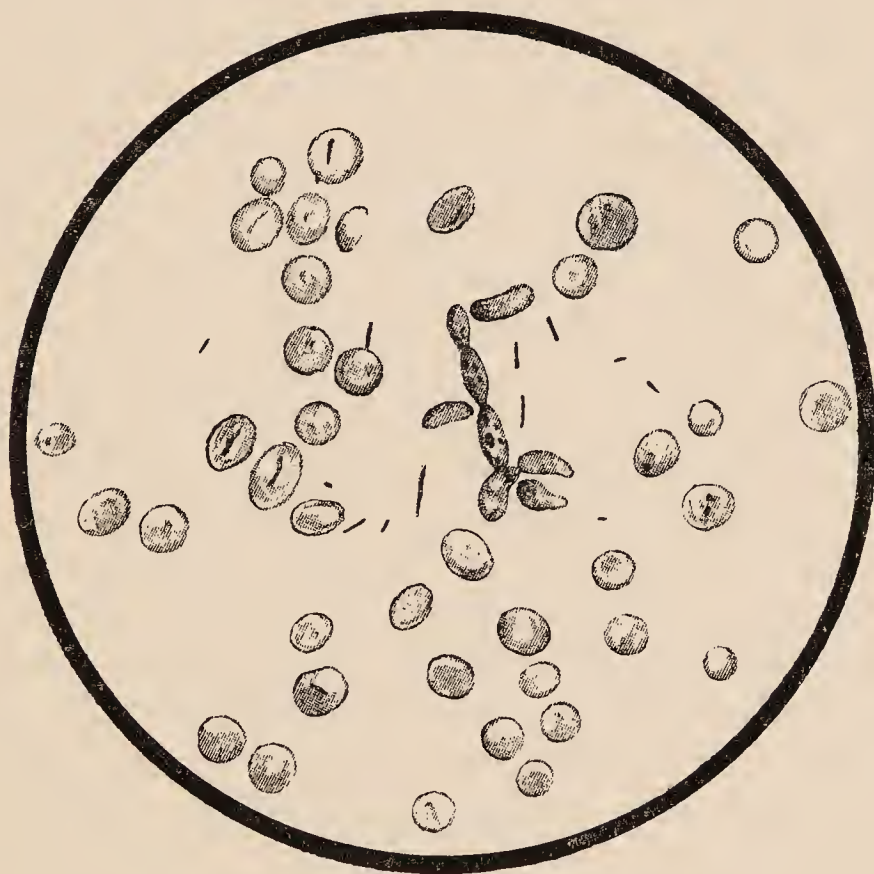
Metschnikoff found on introducing the bacillus of anthrax into the frog that these leucocytes threw processes around them, took them into the cells and digested them. When the number of leucocytes were too small reinforcements were sent from other parts.



PHAGOCYTOSIS.

It was also noticed that the phagocytic power varied according to the power of immunity of the animal. The phagocytic power of susceptible animals is limited, but may be increased by training. Now I assert that yeast cells have a similar power. Experiments have been made with various bacteria. I may mention one experi-

ment with the tubercular bacillus. One cubic centimetre of a pure culture of Koch's bacillus was placed in a sterilised flask with the same quantity of a pure culture of *saccharomyces cerevisiae* (yeast). Sterilised water was then added until it measured five cubic centimetres. The flask was left in an incubator for 18 hours at 37° centigrade. On examination the yeast in some cases showed numerous small ascospores, others showed vacuoles, others appeared empty except that a kind of nucleus was present with a nucleolus. Numerous bacilli were lying free, others were inside the yeast cells, as shown in diagram taken from microscopic preparations. Careful examination showed that the microbe was not simply adherent either to the inferior or superior wall of the cell, but was on a plane with its centre.



PHAGOCYTOSIS.

From this and numerous similar experiments it has been concluded that yeast has the power of digesting bacilli. Further, so long as the yeast cells are vigorous they prevent the fermentative action of bacteria. The young and vigorous cells are the phagocytes, and the pigmented bodies seen in the yeast cells are the remains of

digested microbes. I do not think it needful to go into details regarding this method of treatment, but I can say that I have found it of benefit when combined with good food, fresh air, and sunlight. —(*see Horace Manders' book on the above*).

The principle underlying this treatment is the substitution of a healthy fermentation for one that is unhealthy and pathological. The products of yeast fermentation are undoubtedly beneficial. Carbonic acid allays vomiting, and acts as a diuretic, and also as an antiseptic. Alcohol aids digestion, stimulates the heart and nervous system. Glycerine and succinic acid are also beneficial in various ways. The nuclein contained in the leucocytes of the blood and in the yeast cells is an important antitoxin. When the amount of nuclein in the cell is lessened the phagocytic action is also lessened. A large number of patients have been benefited by this treatment, combined with attention to common sense physiologic principles, which should never be omitted in any form of treatment.

Common sense will at once tell us that treatment cannot be successful in a *one-roomed house*. Further, it can be said without fear of contradiction that *no human being can live in a single-roomed house and continue in health*. Such houses are a standing menace to the health of the entire community, and should as speedily as possible be abolished. These are the centres from which consumption spreads, from which many evils, physical and moral, emanate. Even in large houses, I am sorry to say, an appalling lack of knowledge of the ordinary laws of health is found. Many will hardly credit the astounding fact that in Glasgow at the present day there are houses of from three to six and eight apartments where the inhabitants, intelligent and cleanly people, actually sleep in *dark concealed beds*. Can you wonder that they rise with a headache? Is it surprising that successive members of the family who have slept in the same bed succumb to scarlet fever, measles, or consumption?

Those who are wise enough to avoid the concealed bed are still foolishly inconsiderate of their health, as they relegate the *bed* to an *out of the way corner* as if they were ashamed to allow it to be seen, or they cover it with draperies, and relegate all the old boots, boxes, and other rubbish to a secure and undisturbed position under the bed.

The majority of people really take infinite trouble to provide suitable sites for the comfortable and undisturbed growth of the microbe. Not satisfied with that they put him as near their bed as possible, so that in the still hours of the night with your best defender—the pure air of heaven—carefully shut out a dread tragedy is enacted. The grim microbe seizes you, and either sweeps you out of existence or sends you through life a wreck of your former self. A bed, where all of us spend so much of our life, is deserving of the most careful and intelligent attention. The ideal bedroom should contain little in the way of furniture; the bed should be in the middle of the room and without drapery of any kind. In this connection those who wish to retain their health by attention to small things should avoid staying in a locality where the houses are built on the *block system*. Such a system certainly economises space, but injures the health of the people, and does much to aid the spread of consumption.

I agree with Dr. Williams, who says: “The outlook of the future of consumption is decidedly hopeful, for there is little doubt that much of the disease is due to preventable causes, which the coming reign of hygiene will sweep away, and that in many cases the disease will be nipped in the bud by a combination of anti-phthisical and anti-bacillicidic treatment, while in more advanced cases life will be still further prolonged.”

The coming reign of hygiene, Dr. Williams rightly thinks, will sweep away many of the causes of consumption. The tendency at the present time in Glasgow is to expect too much from our Town Council. The slums must be removed, one-roomed houses abolished, open spaces provided for children, bowling greens and golf courses for the older people, baths, washing-houses, places of amusement, halls, libraries, etc. When all these desirable things are accomplished at much increase of our taxes by our hard-working City Fathers will we as a community be any nearer this desirable reign of hygiene? I venture to assert that we will not. No amount of hard, intelligent, and well-directed effort on the part of a municipality will take the place of *individual effort*. The sweetness of your home, the health of its inmates, depend more on your own intelligent observance of the simple laws of health than upon your surroundings. *Even in the most unfavourable situation by your efforts you can do*

much to make life healthy and happy. A little *self denial* and consideration for others will do much. *Spitting* seems a small thing to mention in this connection, yet it is a fruitful source from which thousands are laid low. I am sure that the people only require their attention drawn to the fact that a *spittle* may be more deadly than bullets fired from a thousand service rifles. In one spittle dropped in one of our busy Glasgow streets millions of tubercular bacilli may be found. Who can say how many lives that one spittle is answerable for? We do not wish to shoot down our fellow-citizens, still less do we wish to lay them low with a slow wasting disease. In our own interest, and in the interest of the whole community, let us see that there is *no spitting on the streets*, in vehicles, or in places of public resort.

Again I wish to remind those who are unfortunately suffering from consumption that while the profession as a whole have now come to regard consumption as *a curable disease*, Sydenham, the father of English medicine, regarded it as such in his time. He says: "Indeed deadly as consumption is, killing two-thirds of those who die of chronic diseases, it has a specific in RIDING as truly as ague in Bark or other diseases has in Mercury." This is really the modern fresh-air cure. Every one cannot, however, afford horseback exercise, but *every one can engage in physical exercise in the open air*. Such exercise should be taken *ten minutes morning and night*. Movements of the arms and legs without dumb bells, and accompanied with *deep breathing, and followed by a sponge with cold or tepid water*. Such movements will prove of immense value in cases of consumption. Too often in sanatoria the patient is fed, no exercise is taken, the weight is greatly increased, but there is no permanent cure. That in my opinion can only be secured by, in addition to medicine, feeding, fresh air, and sunshine, *a graduated form of exercise suitable to each case*.

The following case mentioned by Dr. H. Weber is most interesting and instructive !:—

"About thirty years ago I saw a lady affected with rapid consumption, living in a small street near Bloomsbury, London. The husband, a teacher of languages, had just died under my care at the German Hospital, of chronic consumption, at the age of 38. He was a member of a consumptive family. His wife's family also

was by no means free from consumption; indeed out of three brothers and two sisters, two brothers and one sister had already died of the disease. She herself had seven children, between the ages of 12 and 1.

“The second of these had died from tubercular meningitis. The others—namely, four boys aged respectively 12, 9, 7, and 2 years, and two girls of 5 and 1—were fairly healthy, except the youngest boy, who was pale and rachitic. After the death of the mother some relatives, intelligent and wealthy at the same time, took entire charge of the children. They took them to their home in a mountainous region of Silesia, one of the healthiest parts of Germany.

“The oldest son remained well so long as he took much outdoor exercise; but at the age of 23 he became wrapped up in the study of languages, worked day and night, gave up exercise, took most of his meals in his study surrounded with books, and perished from rapid consumption in less than eighteen months.

“The second son took to farming, and was in excellent health up to the age of 29, when he found his occupation not remunerative enough, and began to work in a commercial house, being confined in an ill-ventilated office during the greater part of the day, and working besides this at home in the hope of getting a better position. After two years of this intensified city life he had several attacks of hæmoptysis, and died in less than two years from the outset.

“The third son has become a cavalry soldier, leading a judicious life, and is a strong and healthy looking man.

“The fourth child, then a girl of five years old, is now a country parson’s wife in a healthy part of Silesia, has no children, and is perfectly healthy.

“The youngest son, rachitic as a child, has become a powerful man, and is a farmer in Canada, and the younger daughter, staying with him, is likewise strong and healthy.

“The history of this family is very instructive; it shows that by favourable circumstances even a strongly marked family tendency may be neutralised; and this becomes still more manifest when I add that by far the majority—namely, 9 out of 11—of the cousins of these children have died of consumption before the age of 28. It further teaches the serious lesson that, if the stringent rules of

health be neglected, even after the constitution has become satisfactorily developed, the disease may suddenly show itself, and run a rapid course."

Professor Allbutt says: "When a man has had it put straight before him what phthisis means, even in its small beginnings, he will learn that a serious, an unflinching and vigilant attitude is his one way of safety. The patient must be kept under incessant medical supervision, kept at his *best* in every respect. The regular visits of the doctor keep up the patient's serious resolve, strengthen his will, inform his judgment, and discipline his habits, *and in all this lies most of the battle.*"

Fresh air as a means of prevention and cure I have already emphasised strongly. Dr. M'Cormac gives several interesting instances in his book. He gives the history of a country house with all material comfort and luxury, in which two sisters, *snuggled up to death* in a perfectly airless sleeping chamber by their devoted mother, perished of galloping consumption within a year of one another. The mansion was noted for the phthisical mortality of its inmates. Of the next occupants, one lady was carried off by phthisis, as a sister had already been. The third and only surviving sister, with a niece, whose father had himself been destroyed by phthisis, now began to cough, spit blood and matter, and doubtless would soon have gone the way of the rest. With some difficulty he induced both of them to alter their habits absolutely—to sleep with chamber door and windows widely open at night, by day to live almost continuously on horseback, and otherwise in the open air. Both recovered perfectly. Both are married, and during the years which have since elapsed there has not been the slightest return of tubercular disease.

Dr. M'Cormac further says: "I would speak especially of a chamber which I once entered, as I had often before entered it, early one winter's morning. It was the sleeping room of my son. His low trestle bed stood betwixt the severally widely open window and door, while the keen, but exquisitely fresh, sweet atmosphere from wind-swept hills careered through the apartment ceaselessly. The hue of exuberant health mantled over the boy's every feature, while bordering the margin of the coverlet there extended a fringe of pure white snow which the genius of the fragrant night had wafted in, all harmlessly, during the hours of my child's repose."

In this connection we may again mention the urgent question of the ventilation of our schools. Sir Henry Roscoe took up this question many years ago. He said, "The first care of all those to whom the education of our children is entrusted should be their welfare and their mental and their bodily progress." Our educational authorities are still far behind in the recognition of the sanitary condition of their schools. Our primary schools are, as respects healthy atmospheres, in a deplorable condition.

If time will permit I should like to mention a case quoted in Dr. Densmore's book on the treatment of consumption. In travelling many years ago through New England, the doctor overtook the post-rider, and after some inquiries into the history of his life, he informed him that he was bred a shoemaker, that his confinement and other circumstances had brought on consumption, for which he was ordered by a physician to ride on horseback. Finding this mode of exercise too expensive he got appointed as post-rider, and in two years recovered his health completely. When he returned to his old trade his consumption returned. Again he mounted the horse and continued in good health for 30 years.

Let me give you the opinion of a consumptive: "I fear I cannot sufficiently convey to you my sense of the importance of a horse to an invalid. In my well-weighed opinion ten miles a day in the saddle would cure more desperate cases of consumption than all the changes of climate and all the medicines in the world. It is a vigorous exercise without fatigue. The peculiar motion effectually prevents all irritation of cold air to the lungs on the wintriest day. The torpid liver and other internal organs are more shaken up and purified by the trot of a mile than by a week of feeble walking."

Another example may be interesting: "I have been an invalid for 25 years. By the advice of my physician, I prepared to move to St. Augustine, Florida. All things were ready; my strength was not sufficient to leave for a few days. A friend had just been elected sheriff of the county; he offered me a situation where I could spend as much time as I chose on horseback. I accepted the offer. The first six months were spent in great agony, but I found my strength improving. It is now nineteen years since I commenced the horseback remedy for tuberculosis. I agree thoroughly with Dr. Densmore in the chief requisite for the cure of

consumption. He says: 'A consumptive who will rest as much in bed as his condition may demand, who will keep his windows open night and day, who will be provided with such clothing that the air can penetrate thoroughly to the surface of the body, who will take a super-abundance of nutrition, and insist that a considerable portion be composed of unsterilized milk—such a patient, in such condition, except in the very last stages, can safely reckon on recovery.'” Add to the above moderate exercise.

The conclusion of the whole matter is that outdoor, free uncontaminated air is essential for the maintenance of health. *Nourishment* is also an absolute necessity, the best nourishment in the case of delicate patients being an exclusive diet of new milk. At least a pint of milk should be taken at each meal. Rest is also of the first importance, and then when the strength has been increased exercise in the open air is essential. Under the old system medicine and hot rooms was the treatment recommended; under the new very little medicine, plenty fresh air, sunlight, food, and SUITABLE PHYSIOLOGICAL EXERCISE.

